REMARKS/ARGUMENTS

Claims 1-60 are pending in the present application.

This Amendment is in response to the Office Action mailed October 5, 2005. In the Office Action, the Examiner rejected claims 1-60 under 35 U.S.C. §103(a). Reconsideration in light of the remarks made herein is respectfully requested.

Rejection Under 35 U.S.C. § 103

1. In the Office Action dated October 5, 2004, the Examiner rejected claims 1-60 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,917,804 issued to Shah et al. ("Shah"). Applicants respectfully traverse the rejection and contend that the Examiner has not met the burden of establishing a prima facie case of obviousness.

Applicants reiterate the arguments set forth in the previously filed Response to the final Office Action.

a) Estimating a measured utilization factor:

In the Office Action dated October 5, 2004, the Examiner argues that Shah discloses existing connections are considered in the calculation for effective bandwidth, citing Column 3, lines 5-13. Applicants, respectfully disagree. For ease of reference, the complete cited portion is repeated below:

> "Because all connections are statistically multiplexed at the physical layer and the bit rate of connections varies, a challenging problem is to characterize, as a function of the desired grade of service, the effective bandwidth requirement of both individual connections and the aggregate bandwidth usage of connections multiplexed on a given link. This information is provided by accounting (on each link) for the amount of bandwidth currently allocated to accommodate existing connections, and by identifying how much additional bandwidth needs to be reserved on links over which a new connection is to be routed. Because of the statistical multiplexing of connections and shared buffering points in the network, both the accounting and reservation are based on some aggregate statistical measures matching the overall traffic demand rather than on physically dedicated bandwidth or buffer space per connection. In addition to the inherent complexity of such a matching, another major challenge is to provide these traffic control functions in real-time, upon the arrival of a connection request. The corresponding procedures must, therefore, be

computationally simple enough so their overall complexity is consistent with real-time requirements."

(Shah, Col. 3, lines 5-27, emphasis added.)

As seen in the above cited paragraph, the technique uses some aggregate statistical measures matching the overall traffic demand, not on the estimated measured utilization factor.

b) Booking factor:

As argued in the previous response, Shah does not disclose or suggest a first estimator to estimate an equivalent cell rate (ECR) based on description of the connection request and the description includes a booking factor. Since Shah does not disclose or suggest a booking factor, Shah does not disclose or suggest a second estimator to estimate a measured utilization factor for admitted connections using measurements of data stream and the booking factor.

The Examiner states that Shah discloses a description including a booking factor and cites column 6, lines 46-63, to support this contentions (Office Acton, page 4). However, column 6, lines 46-63, merely describes a two state fluid flow model. This flow model characterizes a source by the peak and mean rates of the connection and the maximum burst size (MBS). The MBS gives some indication of how the data is being generated by the source and has impact on the amount of resources allocated to the connection (Shah, col. 6, lines 52-55). None of the peak rate, mean rate, and MBS is equivalent to a booking factor. Furthermore, the resource allocation procedure discussed in a) above does not use the booking factor.

In the Office Action dated October 5, 2004, the Examiner states that Applicants fail to define booking factor in the specification or the claims. However, the term "booking factor" is a term well known for persons skilled in the art. Applicants are including the information to illustrate the booking factor in the Appendices.

c) Kinnunen is not a prior art:

Applicants acknowledge that the Examiner has withdrawn Kinnunen as a prior art.

d) Claims 6, 18, 30, 42, and 54:

Regarding claims 6, 18, 30, 42, and 54, the Examiner states that "[I]t is not explicitly stated that the arrays are indexed by certain values or contain certain ratios, but the arrays contain the same parameters as claimed by the applicant and yield the same result (columns 7-

10)." (Office Action, pages 5, 8, 10, 13). However, Shah merely discloses two calculation schemes based on a fluid flow model and a cell loss probability (Shah, col. 6, lines 32-38). Two buffers are used, one for high priority traffic (CBR) and another for low priority traffic (VBR) which are multiplexed to an outgoing link (Shah, col. 8, lines 47-50). None of these is equivalent to a scale factor generator and a scaler.

Furthermore, none of these includes a look-up table having entries computed for the QoS descriptor and indexed by the connection descriptor. The Examiner states that it was obvious to one of ordinary skill in the art that the statistical algorithms taught by Shah and ATM switch connections operate with look-up tables, which can be manipulated by being indexed in various ways (Office Action, page 6). Applicants respectfully disagree. Shah does not disclose or suggest use of a look up table. Shah merely discloses equations to calculate required bandwidth based on the fluid flow method (Shah, Col. 6, lines 64 to Col. 8, line 5), or based on the cell loss probability method (Shah, Col. 8, lines 7-30). The equations show a closed form calculations of the values without using a look-up table. The Examiner states that other references teach these calculations and cites PCT application No. WO 99/65194 by Petajisto ("Petajisto"), and U.S. Patent No. 5,881,049 issued to Beshai et al. ("Beshai"). However, none of the cited references discloses or suggests a look-up table having entries computed for the QoS descriptor and the entries being indexed by the connection descriptor.

e) Claims 12, 24, 36, 48, and 60:

Regarding claims 12, 24, 36, 48, and 60, the Examiner states that Shah teaches a capacity estimator and a measured utilization factor generator (Office Action, pages 6, 8. 11, and 13). Applicants respectfully disagree. Shah does not disclose or suggest estimating a minimum resource needed for the admitted connections within a measurement window and generating the measured utilization factor using the estimated minimum resource and measurement parameters. Shah merely discloses calculations of the required bandwidth based on the fluid flow method and the cell loss probability method. The input parameters for the fluid flow method include peak cell rate, sustainable cell rate, maximum burst size, cell loss probability, expected utilization for high priority traffic, buffer size, outgoing link rate and timing factor (Shah, col. 7, lines 33-41). These parameters are based on a theoretical model with some assumed probability distribution, e.g., exponential distribution (Shah, col. 2, lines 30-40; col. 6, lines 49-52). They are not based

on admitted connections using measurements of data streams arriving at queues and booking factor.

In addition, Shah does not disclose use of measurement parameters. The measurement parameters include the ECR's of the admitted connections, the booking factors of the admitted connections, an upper change limit, and a lower change limit (See, for example, Specification, page 12, lines 24-26).

Furthermore, none of these calculations is performed within a measurement window. The Examiner states that the measurement window is interpreted as a threshold, citing Col. 8, lines 64-67. For ease of reference, the cited portion is repeated below:

> The VBR CAC for thresholds is developed keeping in mind that the thresholds will be appropriately set. The thresholds on the queues are based on the expected load that is offered to the switch for each category of service, high priority VBR, low priority VBR and UBR traffic. The CAC VBR algorithm then treats the high and low priority VBR service connections as independent of each other and guarantees that the sum of the bandwidth allocated to the connections of the respective categories does not exceed their reserved bandwidths. The buffer size (B) is set for each VBR priority.
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> (Shah, Col. 8, lines 64-67; Col. 9, lines 1-7, emphasis added.)

As shown in the above cited paragraph, the term "threshold" simply refers to the expected load. An expected load is not the same as a measurement window. A measurement window is a time period over which the data are collected and processed (See, for example, Specification, page 12, lines 6-7).

Accordingly, Applicants believe that claims 1, 13, 25, 37, and 49 are distinguishable from the cited prior art reference. For the similar reasons, dependent claims 2-12, 14-24, 26-36, 38-48, 50-60 which depend on independent claims 1, 13, 25, 37, and 49, respectively, are distinguishable from the cited prior art reference.

Therefore, Applicants believe that independent claims 1, 13, 25, 37, 49 and their respective dependent claims are distinguishable over the cited prior art references. Accordingly, Applicants respectfully request the rejection(s) under 35 U.S.C. §103(a) be withdrawn.

Conclusion

Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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